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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,770	01/23/2002	Shigeo Fujimori	1023-02	8726

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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT PAPER NUMBER

1762

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/055,770

Applicant(s)

FUJIMORI ET AL.

Examiner

Michael Cleveland

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clark et al. (U.S. Patent 6,749,690, hereafter '690) in view of Schweitzer (U.S. Patent 3,352,282, hereafter '282), Tang et al. (U.S. Patent 5,904,961, hereafter '961) and Duggal et al. (U.S. Patent Application Publication 2002/0190661, hereafter '661).

'690 teaches an integrated mask comprising a plurality of deposition masks (12a-12d) having an array of deposition apertures formed in accordance with a deposition pattern;

a base plate (22) having a plurality of openings (24 a-d) and on which the deposition masks are arranged,

wherein the deposition masks are retained to the base plate by engaging units, such as screws (col. 3, lines 17-26), in a disengageable manner (col. 2, lines 31-38), such that the position of each deposition mask can be adjusted relative to the base plate independently of the other deposition masks (col. 2, lines 44-47), and

wherein alignment marks (19) used for positioning the deposition masks on the base plate are formed on the base plate.

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'690 teaches aligning the mask with the substrate (Abstract) and using the mask to deposit the organic layer of an organic light emitting device (col. 1, lines 51-56).

'690 does not explicitly teach A) adjusting the position between the base plate and the masks prior to engaging the integrated mask with the substrate, B) independently retaining each of the masks, C) using the alignment marks on the mask to align the mask and the substrate, nor D) the use of the mask to deposit more than one EL device on the same substrate.

'690 does not explicitly teach the order of aligning the masks and base plate and engaging the integrated mask with the substrate. However, it has been held that any order of performing process steps is *prima facie* obvious. See MPEP 2144.04.IV.C. and cases cited therein. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have integrated the mask before engaging it with the substrate with a reasonable expectation of success because '382 teaches that both steps occur, and it has been held that any order of performing process steps is *prima facie* obvious.

'690 does not teach independently retaining each of the masks of the integrated mask. However, '282 teaches that it is known in the art of vapor deposition masks to use integrated masks in which each mask (111) is independently placed and retained over a separate opening (110). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used such a composite mask as the particular mask of '690 with a reasonable expectation of success because '282 teaches that such masks are operative for performing vapor deposition for a wide variety of purposes.

'961 teaches using the alignment mark on the mask in order to align the mask and substrate for the deposition of EL devices. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the alignment marks of '382 to have aligned the mask and substrate of '690 with a reasonable expectation of success because '961 teaches that alignment marks on the mask are suitable for aligning the mask and substrate.

'661 teaches the provision of more than one EL device on the same substrate [0070] by evaporating the EL material through a shadow mask [0100]. Therefore, it would have been

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obvious to one of ordinary skill in the art at the time the invention was made to have used the deposition mask of '690 to have deposited more than one EL device on the same substrate with a reasonable expectation of success because '661 teaches that multiple EL devices on the same substrate may be used to convey information, such as advertising and because the mask of '382 has multiple open areas for deposition.

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clark et al. (U.S. Patent 6,589,382, hereafter '382) in view of Schwietzer '282, Tang '961 and Duggal '661 for substantially the same reasons given above. ('382 does not show each mask disposed over separate openings, but this feature is taught by Schweitzer '282.)

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clark '690 in view of Tang '961 and Duggal '661, and further in view of Nagayama et al. (U.S. Patent 5,701,055, hereafter '055).

'382, '961, and '661 are discussed above, but do not explicitly teach the use of  $m$  masks to deposit  $n$  organic EL devices where  $n$  is an integer (greater than 1) multiple of  $m$ . However, it is well known in the art of EL devices to use masks to produce repeating patterns of pixels. For example, '055 teaches moving a deposition mask to produce red, blue, and green pixels (See Figs. 8A-8C and col. 8, line 41-col. 9, line 19) in repeating matrix (See Figs. 1-2; col. 6, lines 17-30). ('055 does not by itself teach that the pixels are individual EL devices because the pixels occur at the crossing of a plurality of perpendicular anode (3) and cathode (9) stripes.) Taking the references as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have deposited the matrix of red, blue, and green pixels as individual EL device each with its own anode, EL layer(s), and cathode because '661 demonstrates that separate EL devices may be independently deposited on the same substrate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have re-used the plural ( $m$ ) masks of '382 to have produced the pixels of the three colors by having moved the masks between depositions of the colors because '055 teaches that such is a suitable method of depositing red, blue, and green pixels, thereby resulting in  $(n=3*m)$  pixel EL devices.

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5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clark '382 in view of Schwietzer '282, Tang '961, Duggal '661, and Nagayama '055 for substantially the same reasons given above.

6. Claims 11-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boudreau et al. (U.S. Patent 4,915,057, hereafter '057) in view of Schweitzer '282, Tang '961 and Duggal '661.

'057 teaches an integrated mask comprising a plurality of deposition masks (20) having an array of deposition apertures (See Fig. 1) formed in accordance with a deposition pattern for plural substrates (col. 4, lines 9-25);

a base plate (14) having a plurality of openings (on either side of frame support (16)) on which the deposition masks are arranged,

wherein the deposition masks are retained to the base plate by engaging units (mask frame pins (17) (col. 4, lines 17-22) (The description of the use of pins to attach the assembled mask to the substrate demonstrates that pins are disengageable (col. 4, lines 49-62; col. 3, lines 13-25; and col. 6, lines 30-53), and

wherein the base plate comprises alignment features (holes; holes (21) on mask (20) are identified by number, but the alignment holes on base plate (14) are not identified by number, see Fig. 1).

'057 teaches positioning the mask and substrates (32) to be subjected to a deposition process and patterning a thin film layer in the deposition process using the mask to form an electroluminescent device (col. 1, lines 35-45).

'057 does not explicitly teach 1) independently retaining each deposition mask, 2) adjusting the position between the base plate and the masks prior to engaging the integrated mask with the substrate, 3) that the mask comprises alignment marks on the base plate, 4) depositing more than one EL device on the same substrate, nor 5) that the EL device is organic.

'057 does not teach independently retaining each of the masks of the integrated mask. However, '282 teaches that it is known in the art of vapor deposition masks to use integrated masks in which each mask (111) is independently placed and retained over a separate opening

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(110). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used such a composite mask as the particular mask of '057 with a reasonable expectation of success because '282 teaches that such masks are operative for performing vapor deposition for a wide variety of purposes.

'057 does not explicitly teach adjusting the position between the base plate and the masks prior to engaging the integrated mask with the substrate. However, it has been held that any order of performing process steps is *prima facie* obvious. See MPEP 2144.04.IV.C. and cases cited therein. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have integrated the mask before engaging it with the substrate with a reasonable expectation of success because '057 teaches that both steps occur, and it has been held that any order of performing process steps is *prima facie* obvious, particularly in view of the teachings of Tang and Schweitzer that the mask may be separate from the substrate.

'961 teaches the use of alignment marks in order to align the mask and substrate for the deposition of EL devices. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used provided alignment marks on the mask of '057 to have aligned the mask and substrate of '057 with a reasonable expectation of success because '961 teaches that alignment marks on the mask are suitable for aligning the mask and substrate. Likewise, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used alignment marks on each component of the mask to assemble the mask because '057 teaches the use of alignment features on each portion, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included at least one alignment mark on the base plate (14) with a reasonable expectation of success.

'661 teaches the provision of more than one EL device on the same substrate [0070] by evaporating the EL material through a shadow mask [0100]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the deposition mask of '057 to have deposited more than one EL device on the same substrate with a reasonable expectation of success because '661 teaches that multiple EL devices on the same

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substrate may be used to convey information, such as advertising and because the mask of '057 has multiple open areas for deposition.

'961 and '661 are both directed to vapor deposition to form organic light-emitting devices as discussed above and in the abstracts of both references. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the mask of '057 to have deposited layers of an organic EL device because '057 teaches that it is suitable for use in manufacturing EL devices, and '661 and '961 both indicate that vapor deposition through shadow masks are useful for forming EL devices.

Claim 12: '057 teaches the use of two masks.

Claim 14: '961 teaches evaporation of the organic layer [0100] or metal electrode [0108-0109] through a shadow mask.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boudreau '057 in view of Schweitzer '282, Tang '961, and Duggal '661 as applied to claim 11 and further in view of Nagayama '055 for substantially the same reasons given for claim 13, above.

### ***Response to Arguments***

8. Applicant's arguments filed 5/16/2005 have been fully considered but they are not persuasive.

Applicant's amendment overcome the prior rejections because Boudreau does not teach that the masks are independently retained. Applicant's arguments regarding the sequence are noted but are unconvincing because 1) they are not commensurate in scope with the claims, which do not include a step of improperly aligning the masks with the base plate, and 2) they are not unexpected because the benefits of convenient replacement by making modular pieces with interchangeable parts is notoriously well known by engineers in all fields, including vapor deposition. Furthermore, such modular masks are known in the art of vapor deposition. See, e.g., Schweitzer.

Applicant arguments regarding Clark are unconvincing in view of newly cited Schweitzer.



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***Conclusion***

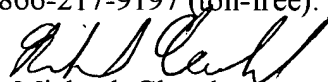
9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Monday-Thursday, 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Michael Cleveland  
Primary Examiner  
Art Unit 1762

7/7/2005